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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/531,218

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EXAMINER

MAKI, STEVEN D

ART UNIT

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1791

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/531,218	SEKI ET AL.	
	Examiner	Art Unit	
	Steven D. Maki	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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- 1) The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- 2) Claims 1 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the scope and meaning of "blowing air into a foaming agent to produce foams" (emphasis added) and "pore size adjusting agent for adjusting sizes of foams" (emphasis added) is ambiguous. It is uncertain if (1) claim 1 requires a first foam having bubbles and a second foam having bubbles (as apparently literally required) or (2) a foam having bubbles (as apparently intended). In other words, it is unclear if "foams" is to be interpreted as "bubbles". Such a "definition" is confusing since one of ordinary skill in the art understands a foam as having bubbles instead of foam being a bubble. Stated differently, the description of a single step of blowing air into a foaming agent to produce plural foams is confusing and ambiguous. As a related matter, "pore size adjusting agent for adjusting sizes of foams" is unclear. In particular, it is unclear if the agent is capable of adjusting the sizes of "pores" (formed by bubbles) or the sizes of "foams" (but not the bubbles therein). The relationship between "pore" in the phrase "pore size adjusting agent" and "foams" is ambiguous.

- 3) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4) **Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art (specification page 1 lines 19-33, page 2 lines 1-12) in view of Sucech (US 5,643,510) and Japan (JP 10-330174).**

The admitted prior art discloses a process for manufacturing a foamed gypsum board comprising:

blowing air into a foaming agent to form a **"preliminarily produced foam"**;
obtaining a foamed gypsum slurry by mixing the "preliminarily produced foam" into a kneaded material containing calcined gypsum, adhesive, additives and water;
pouring the foamed gypsum slurry into a space between upper and lower base papers;
passing the gypsum slurry covered with base papers through a shaping machine for determining the thickness and width of a gypsum board;
roughly cutting off the shaped strip-type gypsum board;
drying the rough cut gypsum board by passing it through a force drying machine;
cutting the dried gypsum board to a predetermined dimension.

The admitted prior art does not recite forming the preliminarily produced foam using a foaming agent and a pore size adjusting agent.

As to claim 1, it would have been obvious to one of ordinary skill in the art to obtain a **"foaming agent for producing foams of desired sizes"** ("**pregenerated foam**") by preliminarily adding a "pore size adjusting agent" such as ferric sulfate or aluminum sulfate to a stock solution of foaming agent so that when such a "foaming

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agent for producing foams of desired sizes" is used in the admitted prior art process to form "preliminary produced foam" ("pregenerated foam"), the manufactured gypsum board (plaster board) has pores with desired size distributed in a gypsum core in view of (1) Sucech's suggestion to control void size (and thereby improve nail pull and strength) in a foamed gypsum board by forming a "pregenerated foam" from a **mixture** of a first stable foaming agent such as alkyl ether sulfate *and* a second unstable foaming agent such as alkyl sulfate *before* adding the foam to the gypsum slurry to form a foamed gypsum slurry to be placed between upper and lower base papers and (2) Japan's teaching to use a **combination** of frothing agent such as alkyl ether sulfate *and* foam adjusting agent such as ferric sulfate and aluminum sulfate to control size of air cells in a gypsum slurry, improve adhesion of the core to the paper and improve strength. Hence, the admitted prior art discloses the combination of steps of blowing air into a foaming agent to produce "foam" and then mixing the "foam" into kneaded material that contains calcined gypsum, adhesive, various additives and water. See page 1 lines 19-33 and page 2 lines 1-12 of the specification. Examiner acknowledges that the admitted prior art is silent as to the composition of the foaming agent. However, Sucech and Japan are not silent as to the composition of a foaming agent. In particular, Sucech et al and Japan disclose a composition comprising alkyl ether sulfate (the same foaming agent used by applicant in the example). Furthermore, Japan recommends using a foam adjusting agent such as ferric sulfate or aluminum sulfate for controlling the sizes of the cells in combination with alkyl ether sulfate. Desired cell sizes comprising comparatively larger cells (Figures 1, 2) and improved adhesion of the core to the paper

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are obtained. With respect to combining foaming agent with an agent for adjusting cell size, Sucech teaches mixing the two agents just prior to feeding them into the foam generator (col. 3 lines 17-18) and Sucech et al teaches generating foam from a mixture of liquid foaming agent, air and water in a suitable foam generating apparatus (col. 1 lines 18-20). Thus, the admitted prior art, Sucech et al and Japan when considered as a whole teach the claimed composition, preliminarily adding step, blowing air step and mixing step. It is emphasized that the claimed foaming agent and pore adjusting agent read on the frothing agent and foam adjusting agent respectively disclosed by Japan. More specifically, the claimed foaming agent reads on alkyl ether sulfate and the claimed pore size adjusting agent reads on ferric sulfate or aluminum sulfate as disclosed by Japan. There is no difference in composition. It is emphasized that Sucech teaches mixing the first foaming agent and second foaming agent to form a mixture and then combining this mixture with air in a foam generating apparatus to form a foam and then adding the foam to the slurry. The admitted prior art substantially discloses the claimed invention (including the rough cutting step) except for the use of two agents to form the pregenerated foam. Both Japan and Sucech teach the use of two agents. When using two agents, Sucech motivates one of ordinary skill in the art to mix the agents and then combine this mixture with air in a foam generating apparatus to form a foam and then add the foam to the slurry. In summary, the applied prior art renders obvious modifying the admitted prior art process by using a composition comprising alkyl ether sulfate and foam adjusting agent such as ferric sulfate or

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aluminum sulfate as disclosed by Japan and making the pregenerated foam comprising the composition using the steps disclosed by Sucech.

With respect to amount of "pore size adjusting agent" (claims 1 and 4), it would have been obvious to add **0.00001 parts to 0.005 parts** by weight of a pore adjusting agent such as ferric sulfate or aluminum sulfate to the foaming agent in view of Japan's suggestion to obtain lightweight plaster board having improved adhesion of the core to the paper and improved strength by using a **0.001 parts to 0.01 parts** "foam adjusting agent" (pore size adjusting agent) for controlling size of air cells in gypsum slurry such as ferric sulfate and aluminum sulfate and a frothing agent ("foaming agent) such as alkyl ether sulfate. See abstract and paragraphs 7-9 and 14-20 of machine translation, Figure 1 and Figure 2. The range of 0.001 to 0.01 disclosed by Japan 174 overlaps the claimed range of 0.00001 to 0.005 disclosed by Japan. It is emphasized that Sucech and Japan disclose using alkyl ether sulfate as a foaming agent and that Japan teaches using foam adjusting agent such as ferric sulfate or aluminum sulfate in combination with alkyl ether sulfate. It is emphasized that the claimed pore size adjusting agent reads on aluminum sulfate and ferric sulfate as disclosed by Japan. See claim 4. It is noted that Japan teaches that uniform and comparatively big bubbles / big closed cells are formed. See paragraph 7 of machine translation and Figures 1 and 2. From a comparison of invention Figures 1 and 2 with comparison figures 3 and 4, it can be seen that the resulting pores in the gypsum board are relatively large.

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Remarks

5) Applicant's arguments with respect to claims 1 and 4 are have been considered but are moot in view of the new ground(s) of rejection.

6) No claim is allowed.

7) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven D. Maki/
Primary Examiner, Art Unit 1791

Steven D. Maki
January 21, 2009